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Intensive Referral to Mutual-Help Groups: A Field Trial of Adaptations for Rural Veterans

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Research Paper

Intensive referral to mutual-help groups: A field trial of adaptations for rural veterans

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ABSTRACT

Objective: A multisite field trial testing whether improved outcomes associated with intensive referral to mutual help groups (MHGs) could be maintained after the intervention was adapted for the circumstances and needs of rural veterans in treatment for substance use disorder (SUD).
Methods: In three Veterans Affairs treatment programs in the Midwest, patients ($N = 195$) received standard referral (SR) or rural-adapted intensive referral (RAIR) and were measured at baseline and 6-month follow-up.
Results: Both groups reported significant improvement at 6-months, but no significant differences between SR and RAIR groups in MHG participation, substance use, addiction severity, and posttraumatic stress symptoms. Inconsistent delivery of the intervention resulted in only one-third of the RAIR group receiving the full three sessions, but this group reported significantly greater 6-month abstinence from alcohol than those receiving no sessions.
Conclusion: Further research should explore implementation problems and determine whether consistent delivery of the intervention enhances 12-step facilitation.
Practice implications: The addition of rural-specific elements to the original intensive referral intervention has not been shown to increase its effectiveness among rural veterans.

1. Introduction

Nearly all service members deployed to Iraq and Afghanistan report facing hostile incoming fire (97%), but most also face additional traumas and stressors, including seeing people begging for food (97%), concern about enemy attack (77%), and concern about family and friends on the homefront (54%)[1]. An estimated 40% report substantial reintegration problems, including difficulty confiding personal thoughts (56%) and controlling anger (57%) [2]. An estimated 41% may have had post-traumatic stress disorder (PTSD) and 38% an alcohol use problem [2]. Approximately one-third of community samples seeking SUD treatment have co-morbid post-traumatic stress disorder (PTSD) [3] and the prevalence among veterans is likely higher [4].

Treatment for substance use disorders requires time. Patients show better outcomes with contact over a 12-month period, including 3 to 6 months of continuing care [5]. Post-treatment continuing care involves lower-intensity engagement in an outpatient setting [5], and it is helps prevent relapse after intensive SUD treatment [6]. Social support is a primary component of continuing care, and a protective factor for SUD treatment relapse [7] and post-deployment traumatic stress symptoms [8].

A mutual-help group (MHG) is any group of individuals who meet regularly to share experiences managing a common problem. Social support provided by MHGs like Alcoholics Anonymous and other 12-step groups improves outcomes [6,9], even for those with concurrent PTSD and SUD [10], and efforts to promote participation reduce continuing care costs [7]. Post-treatment referral to

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mutual-help groups has been described as “an effective, low-cost option” [8] but treatment providers vary in consistency and methods of referral [11].

Rural veterans have disproportionately served in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) [12] and are returning to their communities with significant substance use disorder (SUD) and trauma-related symptoms [13,14]. However, rural veterans have less access than non-rural veterans to continuing care in an outpatient setting [15,16]. Additionally, rural veterans attending MHG meetings are likely to have challenges unique to their rural settings. In rural communities veterans are more likely to be recognized by others [17,18] and rural residents rate MHGs as less acceptable than urban residents do [19]. Further, the only mutual-help groups consistently available in many small or rural communities are AA meetings which may cause some ambivalence in those with problems other than alcohol [20]. In short, MHG referral does not occur in a standardized way and rural residents facing barriers to accessing continuing care may also face barriers to engaging with MHGs.

The purpose of this study is to determine whether a structured, intensive referral to mutual-help groups can be adapted to the circumstances of rural veterans while maintaining effectiveness. In a study of urban veterans leaving treatment, Timko and DeBenedetti [21] found 1-year SUD abstinence rates improved more than 24% with a three-step intensive referral intervention which (1) educated patients on the benefits of mutual-help groups, (2) identified an upcoming local meeting and recovery buddy to accompany the patient, and (3) followed up on attendance [22]. For those with a dual-diagnosis of SUD and PTSD, this intensive referral intervention was associated with an 18% reduction in the number of psychiatric symptoms and a 26% reduction in perceived need for mental health treatment [23].

During typical intensive residential SUD treatment, veterans attend nearby mutual-help meetings, develop sober relationships, and obtain a sponsor, who serves as a mentor providing advice and assistance. Urban and suburban patients often live near their treatment center and can maintain those relationships upon transitioning to the home environment, but rural patients typically do not live within commuting distance. Upon discharge, rural veterans return to communities without these supports, and are at higher risk of relapse [24,25]. Family members are another source of social support preventing SUD relapse [26,27]. Family members are encouraged to support treatment by attending regular sessions which prepare them for the relational turbulence which accompanies recovery. Family members of rural veterans are less likely to attend family sessions and typically have no support themselves [28], thus rural veterans may not receive the same family support benefits that urban veterans do [28].

The current study tests a rural-adapted intensive referral (RAIR) which modifies the original intensive referral intervention by identifying an MHG meeting and recovery buddy in the home community and educating family members on the importance of MHG participation. We tested the following hypotheses in a multisite field trial: Compared to the control condition of standard referral, RAIR will be associated with more MHG affiliation, less use of alcohol and other drugs, and reduced PTSD symptomology. To our knowledge, this is the first evidence-based substance use intervention modified for rural veterans.

The RAIR intervention consisted of three sessions and resources including a flowchart for each session, handouts, a self-help journal, and a list with meeting locations and mutual-help buddies in towns throughout the region. (Materials are available from the corresponding author.) This list of meetings and buddies covered each recruitment site as well as rural communities of central and eastern Nebraska. The sessions provided a trajectory for fully integrating clients into a recovery network, but staff were given flexibility to adapt to each client’s familiarity with MHGs and need for support.

The initial face-to-face session took place either in individual or in group sessions. Staff assessed participants’ knowledge and experience of MHGs, explained the importance of meeting attendance (handout 1), scheduled a MHG meeting to attend before the next session, arranged for the client to meet a MHG buddy at that meeting, provided a journal to record experiences, and sought permission to contact a family member (family handout mailed to the family member).

The subsequent two sessions followed-up on MHG attendance and participation and could be completed in person or by phone. The second session addressed whether and why MHG attendance and buddy contacts were successful. Expectations for MHG meeting behaviors were discussed (handout 2), and if buddy or family support was still needed, contact efforts were undertaken. The third session was similar, but the focus shifted to trouble-shooting participation barriers (handout 3) and planning for sponsorship, service, and other forms of MHG participation (handout 4). The original intensive referral intervention [21]

Table 1
Baseline Characteristics of Standard and Intensive Referral Patients.

	Total ($N = 195$)	Standard ($n = 89$)	RAIR ($n = 106$)	X^2/t	p
Male, *N* (%)	178 (91.3%)	83 (93.3%)	95 (89.6%)	.80	.37
Caucasian, *N* (%)	150 (76.9%)	69 (77.5%)	81 (76.4%)	.03	.85
Hispanic, *N* (%)	11 (5.6%)	7 (7.9%)	4 (3.8%)	1.52	.22
Married, *N* (%)	53 (27.2%)	26 (29.2%)	27 (25.5%)	.34	.56
Rural City or Town, *N* (%)	61 (31.3%)	22 (24.7%)	39 (36.8%)	3.28	.07
Age, *M* (*SD*)	46.86 (12.25)	46.37 (12.64)	47.26 (11.96)	.51	.61
AAAS Score, *M* (*SD*)	4.69 (1.96)	4.64 (2.08)	4.74 (1.87)	.33	.74
Attended MHG ever, *N* (%)	193 (99.0%)	88 (98.9%)	105 (99.1%)	.02	.90
Attended MHG past year, *N* (%)	190 (97.9%)	85 (96.6%)	105 (99.1%)	1.45	.23
# Meetings in past year, *M* (*SD*)	45.56 (74.46)	42.75 (65.19)	47.89 (81.60)	.48	.63
PTSD Checklist, *M* (*SD*)	46.66 (18.02)	45.05 (18.18)	48.01 (17.87)	1.15	.25
ASI-L alcohol, *M* (*SD*)	.39 (.27)	.43 (.27)	.37 (.27)	1.51	.13
ASI-L drug use, *M* (*SD*)	.09 (.11)	.07 (.10)	.10 (.12)	1.87	.06
30-day substance use					
Alcohol, *N* (%)	137 (70.3%)	66 (74.2%)	71 (67.0%)	1.19	.28
Cannabis, *N* (%)	47 (24.1%)	15 (16.9%)	32 (30.2%)	4.70	.03
Methamphetamine, *N* (%)	27 (13.8%)	10 (11.2%)	17 (16.0%)	.94	.33
Cocaine or crack, *N* (%)	24 (12.3%)	8 (9.0%)	16 (15.1%)	1.67	.20

Note: RAIR = rural-adapted intensive referral; MHG = mutual-help group. *M* = mean; *SD* = standard deviation.

relied on the same MHG buddies to provide support to the patient during and after treatment, whereas rural RAIR participants might have one buddy during treatment and a different one on returning to their home community.

2. Materials and methods

2.1. Research design

This field trial used a pretest-posttest quasi-experimental design. Patients entering treatment were assigned to an addiction therapist (AT), half of whom had been trained in RAIR. Those not trained in RAIR provided their standard referral (SR), typically a recommendation to find and attend MHG meetings upon completing residential/intensive outpatient treatment, although referral practices vary [11]. Patents were pretested at baseline and followed-up six months later on measures of mutual-help group affiliation, substance use, and PTSD.

2.2. Sampling

The Institutional Review Board of the Department of Veterans Affairs (VA) Nebraska-Western Iowa Health Care System (VA NWIHCS) approved and monitored human subjects' participation. Participants were enrolled from three VA intensive SUD treatment sites in Nebraska that serve rural and urban veterans. Zip code of residence prior to treatment entry determined rural/urban status utilizing Rural-Urban Commuting Area codes [29].

Eligibility criteria included being at least 19 years of age and having no evidence of cognitive impairment on the Mini-Cog [30]. Those who provided informed consent were enrolled. In-person baseline interviews collected data on demographic characteristics, addiction severity, social support, traumatic events and symptomology, and mutual-help group participation. Six-month follow-up interviews were done in-person or by telephone. Data collection began March, 1, 2013, and concluded December 11, 2014.

A total of 195 participants enrolled and provided baseline data for analysis. Their characteristics are provided in Table 1. Reflective of the region's veteran population, the baseline sample overall was middle-aged and mostly male, white, non-Hispanic, and unmarried. Sixty-one (31.3%) provided residential zip codes qualifying as rural city or town, with no significant difference between SR and RAIR groups. The Alcoholics Anonymous Affiliation Scale (AAAS) revealed widespread exposure to MHGs at baseline. The mean PTSD Checklist (PCL) score of 46.66 ($SD = 18.02$) was just below the VA's recommended threshold of 50.00 for a PTSD diagnosis.

Very low drug severity subscores on the Addiction Severity Index-Lite (ASI-L; Table 1) suggest baseline alcohol use was more problematic than drug use. More than two-thirds of participants had consumed alcohol within 30 days of baseline and nearly one quarter had consumed cannabis. Use of methamphetamine and cocaine/crack was reported by a minority of participants, but other substances (e.g. opiates, stimulants, etc.) were either not reported or used by less than 10% of participants at baseline and therefore not analyzed. Those assigned to the RAIR condition did not differ significantly from those receiving SR, with the exception that a greater percentage of those assigned to RAIR than to SR had consumed cannabis (30% vs. 17%, $p = .03$).

2.3. Instruments used

The independent variable was type of assignment at baseline: standard referral (SR) or rural-adapted intensive referral (RAIR). Patients in RAIR, however, did not consistently receive the full intervention, so additional exploratory analysis compared those who received no RAIR sessions with those who received the full 3 sessions of RAIR. Additional analysis tested for a dose effect among those receiving no sessions, 1–2 sessions, and 3 sessions.

The dependent variable of MHG affiliation was determined by responses to the Alcoholics Anonymous Affiliation Scale (AAAS) [31], modified to include a range of 12-step MHGs. Total scores range from 0 to 9, with higher scores indicating greater affiliation. The measure shows adequate reliability and validity [31,32]. In this sample, the measure displayed adequate reliability, as measured by Cronbach's alpha, at both baseline ($\alpha = 0.71$) and follow-up ($\alpha = 0.77$).

Substance use was measured several ways. The Timeline Follow-Back (TLFB) measure [33] documents frequency and quantity of use of a variety of substances during the previous 30 days. Outcome measures included percent days abstinent and use per using day for each substance.

The Addiction Severity Index-Lite (ASI-L) [34] also measured severity of use for alcohol (ASI-L alcohol) and for other drugs (ASI-L drug use). Scores in each domain range from 0 to 1. The ASI-L alcohol subscale includes six items and yielded Cronbach's alpha of 0.88 for the baseline measure. The ASI-L drug use subscale includes 11 items addressing an array of drugs other than alcohol and also yielded satisfactory baseline reliability ($\alpha = 0.78$).

The PTSD checklist [35] consists of 17 questions relating to three PTSD symptoms: intrusive thoughts (5 items), avoidance (7 items), and hyperarousal (5 items). Possible scores range from 17 to 85, with higher scores indicating greater symptom severity. Reliability using Cronbach's alpha was excellent ($\alpha = 0.95$).

2.4. Data collection and procedures

Patients received standard referral or RAIR depending on the addiction therapist (AT), with caseload typically determining who was assigned each incoming patient. Veterans were approached for study participation after initial admission assessments were completed, precluding random assignment and more closely approximating 'real world' procedures of SUD treatment programs.

Eleven ATs (six males and five females) staffed the three recruitment sites. All ATs were educated about the rationale for RAIR and were encouraged to notify the Principal Investigator of their interest in being trained in RAIR. Three males and two females were trained in RAIR. An equal number of staff at each site with master's degrees were trained in RAIR or provided SR. Scheduling demands and AT specialization precluded randomization.

The intervention group received RAIR from their AT, a peer support specialist (PSS), or physician trained in the intervention. Initially, the PI (a physician) trained the RAIR ATs in the intervention using role plays and group sessions with veterans. It became evident that the RAIR-trained ATs did not consistently have time to perform RAIR and a study published in late 2012 showed referral to 12-step support groups was significantly more effective when delivered by peers than by clinicians [36]. Given this evidence for enhanced effectiveness, we trained PSSs to perform the intervention.

2.5. Data analysis

Data were entered into SPSS Statistics version 22.0 (IBM Corp., Armonk, New York). Data analysis included Pearson's chi-square analysis, independent samples t-test, and analysis of covariance (ANCOVA). Two-tailed tests were used throughout and the threshold for a type I error was $p < 0.05$. Two hundred and two individuals were consented for study participation, but we have baseline data on only 195 participants and follow-up data on 140.

3. Results

3.1. Primary outcomes

Of the 195 baseline enrollees, 140 (72%) were successfully followed-up at six months. Those followed-up were older ($M = 48.39$, $SD = 12.54$) than those not followed-up ($M = 42.96$, $SD = 10.62$, $p = .005$). Otherwise, ethnicity, marital status, MHG participation, PTSD symptomology, addiction severity, and 30-day substance use measured at baseline did not significantly differ between those who were and were not followed up (results not shown).

Initial tests were conducted to determine the effectiveness of SUD treatment overall for the entire sample. As shown in Table 2, participants significantly improved on most measures of MHG involvement, substance use, and PTSD. The improvements did not reach statistical significance in use per using day for alcohol and cannabis (not reported) and in the percent of participants abstinent from cannabis. Insufficient sample size of those reporting drug use prevented statistical comparison of use per using day for methamphetamine and cocaine in this analysis, and for cannabis, methamphetamine, and cocaine in subsequent analyses.

Those assigned to SR and to RAIR were compared across an array of mutual-help group and substance use outcome variables (Table 3). For continuous variables, test statistics were calculated using ANCOVA with the baseline value of the variable entered as a control and the follow-up value used as the dependent variable. The remaining ANCOVAs showed no significant differences, suggesting assignment to the SR or RAIR group was not associated with substance use or MHG participation. The groups were also compared on the percent reporting abstinence from alcohol and from other drugs in the 30 days prior to the follow-up interview. Chi-square analysis revealed no significant difference between the groups.

Not all those assigned to receive RAIR actually received all three prescribed sessions. Of the 106 participants assigned to the RAIR condition at baseline, only 61 (58%) received the first session and fewer received the second ($N = 38$, 36%) and third sessions ($N = 27$, 26%). Veterans are assigned to levels of SUD treatment utilizing the American Society of Addiction Medicine Patient Placement Criteria. The veterans eligible for this study (those in residential or intensive outpatient treatment) were severely impaired and had the greatest treatment needs, often having multiple prior SUD treatments. Their ATs reported that the time required for addressing the severity of their addiction and its sequelae prevented them from consistently performing RAIR. We therefore performed exploratory analyses using as the control group all who received no RAIR sessions and using as the intervention group those who received all three sessions, as the intervention was designed. The "no sessions" control included both those who were assigned to receive SR, and those assigned to receive RAIR but who did not receive any sessions. Results (Table 4) indicate only one statistically significant difference between those receiving no RAIR sessions and those receiving all three. The percentage of participants reporting 30-day abstinence from alcohol was significantly higher in the 3-session group than in the zero-session group (96% vs. 78%, $p = .03$).

Table 2
Mutual-help Group Involvement, Substance Use, and PTSD: Before and After Treatment for Entire Sample.

Dependent Variable	Baseline		Follow-up		Paired *t*-test		
	Mean	*SD*	Mean	*SD*	d.f.	*t*	*p*
AAAS Score	4.64	1.98	5.37	2.15	136	4.32	.00
# Meetings in recent months	42.72	69.59	69.07	66.00	137	3.87	.00
# Other 7 MHG behaviors	3.70	1.70	4.17	1.83	139	3.11	.00
PTSD Checklist	45.87	18.34	36.09	18.65	136	7.00	.00
ASI-L Alcohol	.40	.26	.17	.18	134	9.55	.00
ASI-L Drug Use	.08	.11	.03	.05	136	6.85	.00
Percent days abstinent							
Alcohol	60.91	37.09	92.37	21.46	138	9.76	.00
Cannabis	90.38	25.11	98.59	10.22	138	3.89	.00
Methamphetamine	94.44	19.44	99.90	1.13	138	3.38	.00
Cocaine	96.59	13.86	100.00	N/A	138	2.90	.00
Use per using day							
Alcohol ($n = 25$): # drinks	20.16	23.53	14.67	17.53	24	1.01	.32
Participants abstinent	*N*	%	*N*	%	d.f.	X^2	*p*
From alcohol	38	27.1	114	81.4	1	8.76	.00
From other drugs	83	59.3	127	90.7	1	2.58	.11

Note: $N = 140$; paired-samples *t*-tests. *SD* = standard deviation.

Table 3
Follow-up Mutual-help Group Involvement, Substance Use, and PTSD: Intention-to-Treat.

Dependent Variable	Standard ($n = 63$)		RAIR ($n = 77$)		ANCOVA		
	Mean	*SD*	Mean	*SD*	d.f.	*F*	*p*
AAAS Score	5.26	2.21	5.48	2.10	1	.04	.85
# Meetings in 6 months	65.26	72.99	72.12	60.13	1	.08	.78
# Other 7 MHG behaviors	4.11	1.85	4.21	1.82	1	.17	.68
PTSD Checklist	34.87	19.55	37.21	17.85	1	.02	.89
ASI-L Alcohol	.16	.17	.17	.19	1	.25	.62
ASI-L Drug Use	.02	.04	.03	.06	1	.82	.37
Percent days abstinent							
Alcohol	92.43	21.19	92.42	21.69	1	.00	.99
Cannabis	99.95	.42	97.49	13.67	1	1.49	.22
Methamphetamine	100.00	.00	99.83	1.52	1	.38	.54
Cocaine	100.00	.00	100.00	.00	1	N/A	N/A
Use per using day							
Alcohol ($N = 25$): # drinks	11.47	5.94	17.63	23.71	1	.51	.49
Participants abstinent	*N*	%	*N*	%	d.f.	X^2	*p*
From alcohol	51	81.0	63	81.8	1	.02	.90
From other drugs	60	95.2	67	87.0	1	2.78	.10

Note: The control variable for each ANCOVA is the baseline measure of the dependent variable. *SD* = standard deviation.

Table 4
Follow-up Mutual-help Group Involvement, Substance Use, and PTSD: Actually Treated.

Dependent Variable	No Sessions ($n = 91$)		3 Sessions ($n = 26$)		ANCOVA		
	Mean	*SD*	Mean	*SD*	d.f.	*F*	*p*
AAAS Score	5.40	2.14	5.33	2.33	1	.00	.98
# Meetings in 6 months	67.61	69.48	71.12	45.99	1	.02	.90
# Other 7 MHG behaviors	4.20	1.80	4.08	2.10	1	.05	.82
PTSD Checklist	36.20	20.27	33.16	15.13	1	1.74	.19
ASI-L Alcohol	.17	.18	.15	.18	1	.04	.84
ASI-L Drug Use	.03	.05	.03	.05	1	.06	.80
Percent days abstinent							
Alcohol	91.32	21.83	96.15	19.61	1	.70	.41
Cannabis	99.71	1.62	96.15	19.61	1	3.51	.06
Methamphetamine	100.00	.00	99.49	2.61	1	N/A	N/A
Cocaine	100.00	.00	100.00	.00	1	N/A	N/A
Use per using day							
Alcohol ($n = 20$): # drinks	17.05	19.40	16.0	N/A	1	.00	.99
Participants abstinent	*N*	%	*N*	%	d.f.	X^2	*p*
From alcohol	71	78.0	25	96.2	1	4.51	.03
From other drugs	84	92.3	23	88.5	1	.38	.54

Note: The control variable for each ANCOVA is the baseline measure of the dependent variable. *SD* = standard deviation.

3.2. Additional exploratory analyses

RAIR was not designed to be dose-specific, but we tested for a dose effect by placing participants in three dose categories: no sessions, partial (1–2 sessions), or full (3 sessions). Results revealed no significant between-groups differences (results not shown).

Finally, RAIR was designed to increase MHG participation across a range of attitudes and behaviors, so we compared the no RAIR and full RAIR groups on individual AAAS items: attending meetings, identifying as a member, calling members for help, having a sponsor, being a sponsor, having a spiritual awakening, reading literature, and providing service. We found no significant differences on these attitudes and behaviors (results not shown).

4. Discussion and conclusion

This field trial of a rural-adapted intensive referral to mutual help-groups found no significant difference between the RAIR and SR groups in any of the dependent variables. Compared to the no-sessions group, those receiving the full 3-sessions of RAIR showed no additional improvement on measures including MHG participation, PTSD symptoms, addiction severity, percent days abstinent, and alcohol use per using day. A significantly higher proportion of those who received the intervention as designed, however, were abstinent from alcohol at follow-up. Potential explanations will be considered.

First, the high level of baseline MHG participation among this sample is noteworthy because it leaves less room for improvement. In their six-month outcomes for the original intensive referral intervention, Timko, DeBenedetti, and Billow [37] reported six measures of baseline 12-step affiliation for their sample entering an urban VA outpatient SUD treatment facility. The sample in the present (RAIR) study was higher than the 2006 study on five of the behaviors: being a sponsor (11.3% vs. 7.0%), having a spiritual awakening (46.9% vs. 44.9%), reading MHG literature (96.4% vs. 81.3%), providing service (60.5% vs. 50.6%), and ever attending a meeting (99.0% vs. 96.8%). The present (RAIR) study reported lower rates than the 2006 study of having a sponsor (32.3% vs. 55.4%), perhaps because finding sponsors in rural areas is more challenging.

Baseline MHG behaviors reported in the present sample and in the earlier research on intensive referral indicate the majority of veterans entering SUD treatment have first-hand experience with MHGs. The present sample, in particular, may require less of the basic MHG education that RAIR provides and more of the direct assistance coordinating support. The three study sites were employing Twelve Step Facilitation (TSF) as one of their evidence-based treatment modalities, perhaps making it difficult to improve upon this threshold of 3–4 MHGs per month reported by the participants at baseline.

Second, as in the present RAIR study, the original intensive referral study [37] also found no difference between SR and intervention groups on MHG meeting attendance, reading literature, or being a sponsor. Unlike RAIR, that earlier study resulted in higher rates of having a sponsor, having a spiritual awakening, and providing service when compared to SR. Yet, when compared to the SR group in the present RAIR study, that 2006 research on intensive referral at six month follow-up had lower rates on five measures of MHG participation common to both studies: having a sponsor, previously being a sponsor, having a spiritual awakening, reading literature, and providing service. Meeting attendance measures were not directly comparable, but did not appear to diverge substantially. The Timko et al. [37] study achieved greater reductions in ASI drug use than did the present study's SR, but a smaller reduction in ASI alcohol. These comparisons suggest RAIR's comparison group achieved results at least comparable to the original intensive referral. Rather than suggesting intensive referral is ineffective, the results suggest that standard referral in the Nebraska VA treatment centers is as effective as intensive referral, both in its original form and in the rural-adapted intensive referral. Another possible explanation is that referral to MHGs is more common today than it was a decade ago.

Third, the preliminary finding that a significantly higher percentage of 3-session RAIR participants were abstinent from alcohol in comparison to those who received no RAIR sessions (96% vs. 81%) suggests the intervention has some effect, even if the mechanism is unclear. Neither the AAAS scores nor any individual AAAS behavior significantly differed between the groups, yet a significantly higher percentage of alcohol-abstinent participants was documented in the 3-session RAIR group. Similar findings were reported in an effectiveness study of Making AA Easier (MAAEZ), a six-week, manual-guided intervention with goals similar to RAIR. In studying the mediating role of various 12-Step behaviors and attitudes, Subbaraman, Kaskutas, and Zemore [38] found that only MHG service work mediated MAAEZ's effect on abstinence in the overall sample. If a greater proportion of people remain abstinent even when they are not engaging more frequently than others in MHG behaviors, then the mechanism motivating abstinence is either a MHG behavior or attitude which has not been measured or, more likely, some aspect of the referral program is motivating abstinence. Future research should consider whether the active ingredient is, for instance, reinforcing abstinence as a goal [39] or expanding the sober social network via the group format [40].

Finally, this was the first multisite field trial of intensive referral and although the staff were trained and routinely monitored for fidelity, they did not consistently deliver the sessions. A full implementation study is forthcoming, but a primary implementation barrier cited by the staff was the amount of time required to deliver the intervention, particularly the first session, delivered to only 58% of assigned participants. The limited time patients spend with an addiction therapist frequently focuses on solving problems which may not directly relate to post-treatment social support.

Future research should consider the effectiveness of intensive referral in varied contexts. For instance, is intensive referral more effective in treatment centers relying on cognitive behavioral therapy rather than on TSF? The components of the intervention, and especially the adaptations we integrated, should be examined for efficacy vis-à-vis the time required to deliver them and the alternative SR procedures.

Limitations of the study include inconsistent implementation and enrollment in an exclusively veteran population potentially limiting generalizability. Those who received RAIR may have been influenced by the individual delivering it, by mode of delivery, or by some other variable not measured. A significantly higher proportion of cannabis users was assigned to receive RAIR, which may have affected the results, given that Alcoholics Anonymous and most other MHGs accessible to rural and urban veterans alike do not focus on problems with marijuana.

5. Conclusion

At six-month follow-up, rural-adapted intensive referral and standard referral groups did not differ on measures of substance use, mutual-help group attendance or participation, or post-traumatic stress symptoms. Additional analyses comparing those receiving no RAIR sessions to the minority who received the intervention as designed likewise found no differences, with one exception: those receiving three sessions were significantly more likely to be abstinent from alcohol than those receiving no sessions. If the intervention is to realize its potential, implementation barriers must be addressed.

Practice implications

In programs using Twelve Step Facilitation, addiction professionals' routine practices to connect rural veterans with MHG members and meetings are effective. RAIR did not have additional benefits, possibly because of implementation challenges.

Informed consent and patient details: I confirm all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of the story.

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